Field Tips

1. A good ground balance is critical to success.
2. Ignore chirps, squeaks, blips, grunts, and other minor clipped sounds that are not repeatable.
3. A broad increase in the tone is likely due to a shift in the ground mineralization (often called a *hot spot*) rather than a large deep target. If it is due to mineralization, a slight adjustment to the ground balance will cause it to go away.
4. A good target will give a smooth, distinctive response. The tone will quickly go from soft to a sharp peak and back to soft. The strength of the peak depends on the depth of the target. Dig anything that gives a response like this.
5. A long nail will give a "good" response from one direction if it is lying flat in the ground. When the loop is swept from a different direction, the signal will be sharp but clipped instead of smooth. That is, there is no gentle rising of the sound to the peak and then dropping off.
6. Bits of nails shorter than half an inch, small flat pieces of can, boot tacks, wire, etc. will often sound the same as a nugget, so dig them all.

GMT Super Pulse Owner's Manual

White's

GMT Super Pulse

Owner's Manual

White's Electronics, Inc.
Sweet Home, Oregon USA

Building the World's Finest metal detectors for over 60 years.

Part Number 621-0534 — V1.0

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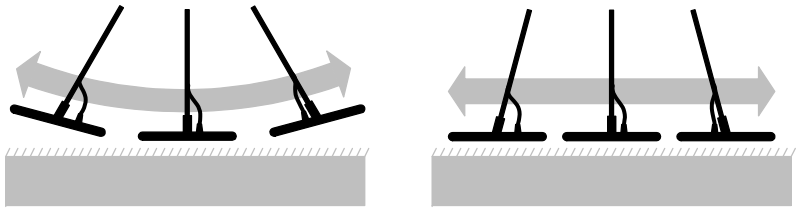
GMT Super Pulse Specifications

Operating mode . . . . . Pulse Induction
Pulse Frequency . . . . . 2.6kHz - 3kHz
Pulse Delay . . . . . 10-25μs variable
Search modes . . . . . PI, Ground balanced PI
Ground balance . . . . . Differential delay
Audio tones . . . . . 1 or 2
Audio output . . . . . Speaker, headphones
Search coil . . . . . 7.5" Dual Field
12" Dual Field
Weight . . . . . 3 lbs (7.5" DF coil)
3.5 lbs (12" DF coil)
Length . . . . . 43 - 48 inches, adjustable
Batteries . . . . . (8) AA alkaline
Battery life . . . . . .4-5 hours typical
Warranty . . . . . .2 years, transferrable

response. The following illustration shows improper and proper coil sweep motion.



Wrong **Right**

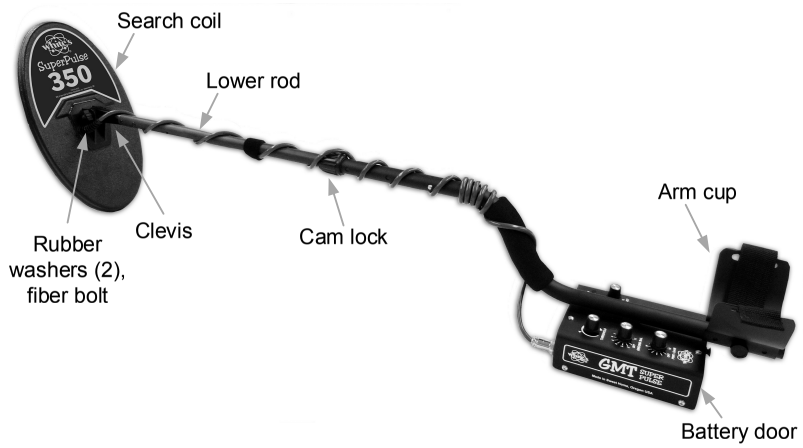
Dealing with Noise

Because PI detectors have wideband receivers they are more prone to noise and interference than narrowband VLF designs. There are a few strategies for dealing with noise. First, use the **Frequency Offset** control to slightly adjusts the overall pulse rate. With the **Threshold** and **Gain** turned up to the point of mild chatter, make very small incremental adjustments to the **Frequency** control to minimize the chatter.

Some sources of noise cannot be dealt with electronically, such as electric fences. Try to identify the noise source and disable it. Indoor testing is notoriously difficult to do with PI detectors due to the overwhelming number of EMI sources. If you cannot minimize noise with the **Frequency** control, then turning down the **Gain** or **Threshold** is your best bet. Excessive chatter will easily mask targets, plus results in audio fatigue. It is better to trade off sensitivity for smooth audio so you can hear the targets.

White's metal detectors are proudly designed, built, and tested in Sweet Home, Oregon USA by the employees of White's Electronics.

Assembly



1. Remove all parts from the shipping carton and check assembly diagram to ensure all parts are present.
2. Install black rubber washers on fiber clevis/lower rod, insert clevis lower rod onto loop ears. Use only nonmetallic washers, fiber bolt, and fiber thumb nut to secure loop/search coil to clevis/lower fiber rod.
3. Unlock "S" rod cam-lock and insert clevis/lower rod into curved "S" rod so that stainless steel spring clip buttons line up and lock into one of the adjustment holes in the curved "S" rod. Turn cam-lock to secure. The second or third adjustment holes are suitable for average sized adults.
4. Wind the loop cable around the rod assembly, first revolution over the top of the rod, all the way to the top of the curved "S" rod, about five revolutions. Use the black cable retainers, one near the loop, and one near the top of the curved "S" rod, to hold the loop cable in place. Plug the cable into the jack on the front of the control box.

5. Grip the instrument by the handle, with your arm in the elbow cup with strap and sweep the loop/search coil over the floor. If the instrument fit feels uncomfortable, readjust clevis/lower rod length with spring clip button and cam-lock so that search coil can be held near the floor without stooping over.
6. Remove the protective paper from the two black arm cup foam pads. Carefully align pads on the inside of the elbow cup, one on each side of the center rod, and press firmly into place.
7. Adjust the elbow cup strap so that it is loose enough for you to slide your arm in and out without loosening each time you want to set the detector down. The elbow cup strap provides extra leverage and control. However, some prefer not to use it.
8. Install the battery pack.

Batteries

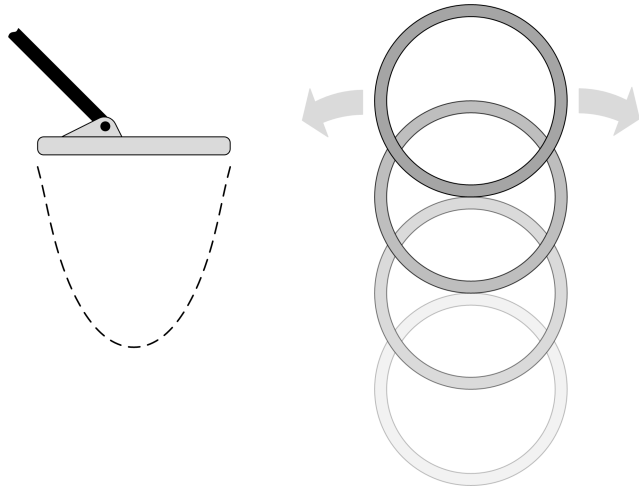
The *GMT Super Pulse* includes two standard alkaline battery packs. They supply a nominal 12 volts and will power the *GMT Super Pulse* for about 4-5 hours (this can depend on the quality of the alkaline batteries). The *GMT Super Pulse* will operate until the batteries drop to about 8.5 volts, at which point the low battery LED will turn on.

learn their audio responses. A US nickel or small gold nugget works well for a low conductive target, and a US quarter makes a good high conductive target. *GMT Super Pulse* is a motion detector, so target responses depend on the motion of the coil. If you hold the coil steady over a target, the audio response will fade back to the threshold tone.

Sweep Methods

With any metal detector, the size of the search coil presents a trade-off between depth and sensitivity. A larger coil offers better depth on larger targets at the expense of small-target sensitivity, and a smaller coil has better sensitivity to small targets, but at a lesser depth.

Proper sweep technique is important with any detector. Round coils tend to have a conical pattern of sensitivity as illustrated below. As such, coverage at maximum depth is less than the size of the coil, so it is always recommended that successive sweeps are overlapped by about 50%:

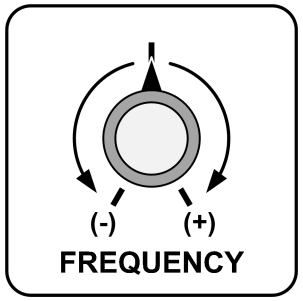


Besides overlapping each sweep, it is important to keep the coil close and parallel to the ground. Pendulum-swinging the coil results in loss of depth, and if the ground balance isn't perfectly set the variation in loop height will create a ground

response at GB=5 (see **More Info** for audio responses).

Occasionally there is not enough mineralization to require ground balancing (e.g. non-mineralized beaches), and **Ground Balance** may be turned off. This disables the ground balance and *GMT Super Pulse* will run as a straight PI detector. This gives a slight improvement in depth but, of course, will respond to mineralization and eliminates the ability to discern conductivities as all targets will produce a high tone.

Frequency



This control makes small adjustments to the transmitter pulse rate. This is used to counteract any interference which might be due to outside electromagnetic sources, such as radio stations, microwave, short wave, electric fences, power lines, lightening, electrical storms, or other metal detectors being used nearby. This interference is recognized by a warbling or repetitive pulsing of the audio threshold, and can mask target signals.

If you are experiencing interference, adjust the **Frequency** control for minimal chatter. Adjustments should be done in small steps, with a few seconds between each adjustment to see if the unit settles down. If you cannot deal with interference with the **Frequency** control, then reduce the **Gain** and/or **Threshold** settings to obtain a reasonably stable operating point..

More Info

Audio

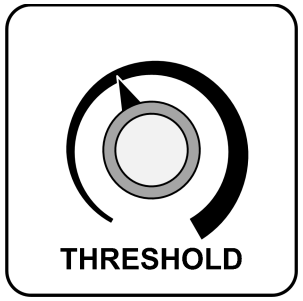
With **Ground Balance** = **Off** all targets will give a high audio tone. With **Ground Balance** enabled, low conductivity targets give a high tone a high conductivity targets give a low tone. New users are encouraged to practice with various targets to

QuickStart

1. Set the **Ground Balance** to ~8.5.
2. Turn on the power and adjust the **Gain** to "2."
3. Adjust the **Threshold** to achieve a faint background hum.
4. With the coil on the ground (no motion) increase the **Gain** until the audio begins to chatter. Back off slightly for a reasonably smooth threshold.
5. Using a spot free of targets, bob the coil up & down and adjust the **Ground Balance** control to minimize the audio response.
6. The *GMT Super Pulse* has a two-tone response: low conductors (small gold nuggets, foil) give a high tone, high conductors (large gold nuggets, silver coins) give a low tone.

Controls

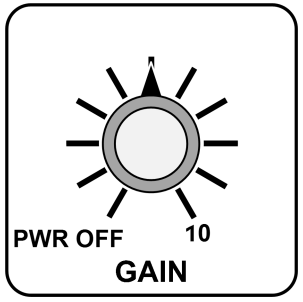
Threshold



The **Threshold** control sets the level at which the background audio tone is heard. In most cases, faint target signals are easiest to hear when the threshold is set to a low but clearly audible level. A higher threshold level can result in audio fatigue. Too low of a threshold level means that a stronger target signal is required to produce an audible change. **Threshold** is best determined at a low gain setting where there is no chatter.

The threshold can be set low enough to effect a "silent search" audio. Some people prefer silent search to prevent audio fatigue. If you choose to do this, increase the threshold to the point where you can hear the threshold tone, then slowly back off until it is barely inaudible. Reducing the threshold any more than necessary requires stronger target signals to produce an audio response. Other controls — including **Gain** and **Ground Balance** — are best adjusted with an audible threshold.

Power/Gain



The **Gain** control increases or decreases the amplification of the receive signal. Normally, this determines how deep the detector will "see" a target.

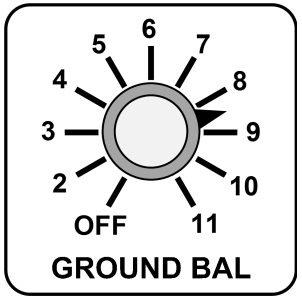
However, increasing the gain not only increases the amplification of target signals, but also that of ground signals and electromagnetic interference (EMI) as well. A common mistake is to assume that higher gain will always give better depth. In air tests this is

generally true, but ground results can depend on the amount and type of mineralization.

With the coil on the ground, increase the gain until the detector exhibits chatter, then back off slightly for a reasonably steady threshold tone. Proper ground balancing will minimize chatter due to mineralization.

The **Gain** control is also used to turn the detector on and off.

Ground Balance



This control is used to balance out the signal from ground mineralization. There is an **OFF** position for which *GMT Super Pulse* runs in straight PI mode with no ground balance.

To ground balance *GMT Super Pulse* set the **Gain** to about the midpoint or until the audio just begins to chatter. Pump the search coil up and down from about one inch off the ground up to 6-8 inches above the ground while listening for a change in the audio. If the GB is too low, the audio will have a high tone when the coil is lowered to the ground; if the GB is too high, the audio will have a low tone. Adjust the **Ground Balance** control for minimal audio changes. For most moderate mineralization, this will be around "8". A simple technique is to start with the GB set intentionally too low (say, 5); pump the coil and increase the GB until the high tone begins to transition to a low tone, then back off slightly.

If you begin to hear ground noises (false signals) as you sweep the coil you should check the ground balance.

There are some cases where a particular target will fall exactly on top of the ground balance point and *GMT Super Pulse* will not be able to detect it at all. Targets that are close to the ground balance point may have their tone response shifted if the **Ground Balance** control is adjusted. For example, a given target may have a high tone response with GB=9 but a low tone